UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,317	05/08/2001	Keon-Hoe Cha	51876p246	4709

8791 7590 02/27/2004

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER	
THAI, HANH B	
ART UNIT	**PAPER NUMBER**
2171	7

DATE MAILED: 02/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/852,317	CHA ET AL.	
	Examiner	Art Unit	
	Hanh B Thai	2171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

This is in response to Amendment filed December 17, 2003

DETAILED ACTION

Response to Arguments

Applicant argues on pages 10-11 (response 12/17/2003) that "transforming a natural language query sentence inputted from a user to conceptual graph depending on the standardized formats of sentence structure and semantics structure and searching information relevant to the requirement of the user among the indexed information" are neither taught nor suggested by Paik. Examiner respectfully disagrees. Paik teaches the transforming a natural language query sentence to conceptual graph (see col. 20, line 59 to col. 21 line 6, Paik) and this query sentence has to be inputted from the user (see col. 1, lines 59-64, col.8, lines 8-18 and lines 49-58, col. 9, lines 1-62, Paik).

Applicant argues on page 12 (response 12/17/2003) that "transforming the generated sequence to a conceptual graph depending on the standardized formats of sentence" is neither taught nor suggested by Paik or the references of record. Examiner respectfully point out that limitation was not claimed.

Applicant argues on page 12 that " analyzing sentence structure and semantic structure of a natural ...searching a conceptual graph in a database semantically nearest to the conceptual graph...and retrieving indexed information of the search conceptual graph and provided to the user". Examiner respectfully disagrees. Paik clearly teaches the claimed feature when Paik shows the similarity between the knowledge representation (KR) units and every KR unit in KR database and the concept graph similarity of the relation (see col.22, lines 14-58. Paik). The semantic similarity of conceptual graph is considered as "semantically nearest".

Applicant argues on page 14 that Paik and deHita combination fails to teach "an interactive processing means for outputting a sentence format rule for which failure data from the input sentence analyzing means is corrected depending on the standardized formats of sentence structure and semantic structure, and indexing and searching result". Examiner respectfully disagrees. Paik teaches the concept relation concept (CRC) of the sentence structure and the sentence format rule (see col.8, lines 63-67 and col.9, lines 52-62, paik). deHit is used as a secondary reference for the step of correcting the spelling and misspelling query in Paik. The system of Paik will generate an incorrect or nonsense CRC unless the spelling is corrected. Therefore, the combination output the correct CRC that corresponds to the sentence formatted with the spelling failure data corrected.

Claim Objections

Claims 6, 15 and 21 are objected to because of the following informalities:

It seems that "transformed" in "transforming the transformed conceptual graph" of claim 6, 15 and 21, last paragraph, is redundant and has to be deleted. Correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-3 are rejected under 35 U.S.C. 112, second paragraph because they recite the limitation "semantic relation". There is insufficient antecedent basis for these limitations in the claims.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 3, it is not clear that "each relation" at step 2 of the claim refers to which relation in step 3 of the claim.

Claims 5-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding independent claim 5, how do we know what is the "requirement of the user".

Regarding claim 8 recites the limitation "structure analysis". There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 10 recites the limitation "the sentence semantic relation". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

35 U.S.C. § 102(e), as revised by the AIPA and H.R. 2215, applies to all qualifying references, except when the reference is a U.S. patent resulting directly or indirectly from an

international application filed before November 29, 2000. For such patents, the prior art date is determined under 35 U.S.C. § 102(e) as it existed prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. § 102(e)).

1. Claims 5-7, 9, 14-16, 18-19, 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Paik et al. (U. S. Patent no. 6,076,088), provided by the Applicant.

Regarding claims 5 and 20, Paik discloses a method for generating and retrieving information for use in an apparatus for generating and retrieving information based on standardized formats of sentence structure and semantic structure, the method comprising the steps of:

- transforming a natural language sentence (information and knowledge) described by a information provider to a conceptual graph depending on standardized formats of sentence structure and semantic structure and indexing the conceptual graph (see col. 8, lines 59-67 and col. 20, line 59 to col. 21 line 6, Paik); and
- transforming a natural language query sentence inputted from a user to a conceptual graph depending on the standardized formats of sentence structure and semantic structure and searching information relevant to the requirement of the user among the indexed information (see col. 1, lines 59-64, col.8, lines 8-18 and lines 49-58, col. 9, lines 1-62 and col. 20, line 59 to col. 21 line 6, Paik).

Regarding claims 6, Paik further discloses the steps of:

- generating a sentence in which ambiguities of the sentence structure and the semantic structure of the sentence inputted by the information provider

depending on the standardized formats of sentence structure and semantic structure (see col. 8, lines 49-53, Paik);

- transforming the generated sentence to the conceptual graph by sentence analysis and semantic analysis (see col.8, lines 59-67 and col. 20, lines 59-65, Paik); and
- "transforming the transformed conceptual graph to a record of a table by a relation node and indexing the record" corresponds to the transforming of concept relation concept to the form that stored in the database (see col. 21, lines 22-27, Paik).

Regarding claims 7 and 16, Paik further discloses a sentence relevant to the standardized formats of sentence structure and semantic structure by generating information for information transaction to guide the user to make the sentence from the user have the standardized format (see col. 9, line63 to col. 10, line7 and col. 20, line 59 to col. 21 line 6, Paik).

Regarding claim 9, Paik further discloses the steps of:

- analyzing the sentence structure and the semantic structure of the natural language query sentence received from the user and transforming the sentence to a conceptual graph (see col. 8, lines 49-67; col. 9, lines 44-62 and col. 20, lines 58-65, Paik);
- computing the semantic relevance by searching the semantically nearest conceptual graph at conceptual graph of the query (see col. 22, lines 14-32, Paik; and

- extracting information indexed by the searched conceptual graph to provide to the user (see col. 14, lines 17-29 and col. 22, lines 53-58, Paik).

Regarding claims 14 and 19, Paik further discloses information stored and retrieved with respect to semantic relation by partitioning the semantic structure graph and information and document nearest to the request information specification of the user is retrieved by using the semantic relevance between concepts by a noun thesaurus system (see col. 22, lines 14-33 and col. 13, lines 1-5, Paik).

Regarding claims 15 and 21, Paik discloses an information generating method for use in an information generating apparatus based on standardized formats of sentence structure and semantic structure, the method comprising the steps of:

- generating a sentence which ambiguities in sentence structure and semantic structure are solved depending on the standardized formats of sentence structure and semantic structure from a natural language sentence inputted by a information provider (see col. 12, line 44 to col. 13, line 24, Paik);
- transforming the generated sentence to a conceptual sentence analysis and semantic analysis (see col.8, lines 59-67 and col. 20, lines 59-65, Paik); and
- "transforming the transformed conceptual graph to a record of a table by a relation node and indexing the record" corresponds to the transforming of concept relation concept to the form that stored in the database (see col. 21, lines 22-27, Paik).

Regarding claims 18 and 22, Paik discloses an information retrieving method for use based on standardized structure, the method retrieving apparatus structure and semantic comprising the steps of:

- analyzing sentence structure in an formats and semantic structure of a natural language query sentence received from a user transform it to a conceptual graph (see col. 8, lines 49-67; col. 9, lines 44-62 and col. 20, lines 58-65, Paik);
- searching a conceptual graph in a database semantically nearest to the conceptual graph of the query and computing semantic relevance (see col. 22, lines 14-32, Paik); and
- retrieving indexed information by the searched conceptual graph and provides it to the user (see col. 22, lines 53-58, Paik).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 8, 10-12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paik et al. (U. S. Patent no. 6,076,088) in view of de Hita et al. (U. S. Patent no. 6,081,774).

Regarding claims 1, 4, 8 and 17, Paik discloses an apparatus for generating and retrieving information based on standardized formats of sentence structure and semantic structure, the apparatus comprising;

- a data storing means (see "Data Storage" 35, Fig.1, Paik) for storing language knowledge data used to analyze a sentence for information supply and a query for information request from a user, semantic representation data for representing sense of sentence as a conceptual graph, and Web documents (see col. 8, lines 49-67 and col. 20, lines 58-65, Paik);
- an input means for receiving a natural language query sentence for generation of a natural language sentence for information supply and specification of information request from the user (see col. 9, lines 3-8 and 16-28, Paik);
- an input sentence analyzing means for analyzing sentence structure of the natural language sentence or the natural language query sentence inputted from the user with reference to data stored at the data storing means to generate semantic structure (see col. 8, lines 9-29 and col. 49-58, Paik); input "query" corresponds to "input sentence".
- semantic structure processing means for partitioning the semantic structure analyzed by the input sentence analyzing means to index and store or for computing semantic relevance to search supply information and document most semantically relevant to the requested information specification (see col. 9, lines 44-62, Paik);
- an interactive processing means for outputting sentence format rule (col.8, lines 63-67 and col.9, lines 52-62, paik); and
- an information transferring means for transferring the data from the interactive processing means to the user (see col. 8, lines 13-18, Paik).

Paik, however, does not explicitly disclose "... failure data from the input sentence analyzing means is corrected". de Hita, on the other hand, discloses the detection the misspelling words from the input text (see col. 17, lines 35-54, de Hita). Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed feature in the system of Paik in order to accurately detect and correct the misspelling error from the input.

Regarding claim 2, Paik/ de Hita combination further discloses the apparatus whereas the input sentence analyzing means receives the sentence inputted from the user (see col. 9, lines 19-23 and 44-51, Paik), sequentially analyzing it by comparing it with data of lexicon storing means (see col. 8, lines 51-55, Paik), predicate case frame storing means and noun thesaurus storing means included in the data storing means (see col. 6, lines 40-46, Paik), morphologically analyzes at a morphological analyzer, parses at a parser to generate a sentence structure tree, and performs semantic analysis at a semantic structure generator to generate the semantic structure (see col. 9, lines 44-51 and col. 12, lines 44-52, Paik).

Regarding claim 3, Paik/de Hita combination further discloses semantic structure processing means includes:

- a conceptual graph transformer for conceptual graph outputted from the generator depending on semantic relation (see col. 20, line66 to col. 21, line6, Paik);
- a conceptual graph indexer (see "Unit Indexer" 245, Fig.5, Paik) for indexing the Web documents including the supply information of the user by using a record of a conceptual pair related with each relation transformed by the

conceptual graph transformer (see col. 6, lines 6-17 and col. 13, lines 34-40, Paik). "Unit Indexer" corresponds to "conceptual graph indexer"; and

- a conceptual graph searcher for searching the supply information having highest semantic relevance between the semantic structure of the user's query and the stored semantic structure (see col. 9, lines 52-62 and col. 22, lines 15-44, Paik).

Regarding claim 10, Paik/de Hita further discloses the step for transforming the natural language sentence (information and knowledge) described by the information provider and the natural language query sentence inputted from the user to the conceptual graph depending on the standardized formats of sentence structure and semantic structure includes the steps of:

- morphologically analyzing the natural language sentence by a morphological analyzer when the natural language sentence for information to be provided by the information provider or to be supplied to the information provider and checking whether morphological analysis is performed successfully (see col. 18, lines 22-61, de Hita);
- if morphological analysis fails, generating failure type data depending failure type, and if morphological analysis is performed successfully, analyzing the sentence structure by using the morphological analysis result (see col. 17, lines 35-53, de Hita); transforming the sentence analysis tree to the semantic structure depending on the generation of the analyzed sentence structure; and inputting the semantic structure to a conceptual graph transformer depending on appropriateness of the semantic structure for the standardized format (see col. 17, lines 11-34, de Hita).

Regarding claim 11, Paik/de Hita further discloses the steps of:

- receiving from a semantic structure generator a sentence tree (T) in which ambiguities of the sentence structure is solved and transforming the sentence tree (T) to pre-stage conceptual graph (P-CG) depending on a tree transformation rule (see col. 19, lines 1-37, de Hita);
- searching information to be processed as a referent from the using a numeral and definitive processing rule to define as the referent and processing the conceptual node by setting a proper noun and the tense as type information of the concept by using a thesaurus system, in order to transform the transformed P-CG to a conceptual graph in which the semantic ambiguities are solved; and after the concept node processing, generating a conceptual graph of a final semantic structure by determining relation between concept nodes by the thesaurus system and frame information (see col. Col. 4, lines 40-64, de Hita).

Regarding claim 12, Paik/de Hita further discloses "the topic level" and "topic priority" correspond to node level and relation node which depending on the priority rule of the language for the determined priority nodes (see col. 27, lines 20-45 and Summary of de Hita).

Allowable Subject Matter

3. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: the prior art fails to disclose or suggest the claimed provision "semantic relevance (S (x, y)) is a distance from a node x to another node y in the thesaurus system and can be expressed as follows.

$S(x,y) = 1 / (1 + d(x,y))$

where d (x, y) is the distance from the node x to the node y in the thesaurus system, is 0 if the y is one of lower nodes and is computed as the number of edges between the nodes if otherwise." as claimed in conjunction with remaining claims provisions.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Roux et al. (U.S. 6,678,677) disclose an apparatus and mmethods for information retrieval using self-appending semantic lattice.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh B Thai whose telephone number is 703-305-4883. The examiner can normally be reached on 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Hanh Thai HT
Art Unit 2171
February 11, 2004.

UYEN LE
PRIMARY EXAMINER